The Macdonald Journal

DECEMBER 1979 / JANUARY 1980

The Spirit of Macdonald 75 years

Macdonald 75 ans de Rayonnement

You too can contribute to energy conservation

Hydro-Québec's appeal to residential customers to stop wasting electricity has often met with the query as to whether schools, businesses, industry and farms are fully assuming their responsibilities in this regard.

This is why we attach so much importance to our energy conservation programs already under way or planned in public and private buildings, commercial and industrial centers, and municipalities throughout Québec.

These initiatives have already produced substantial savings and, what is more, are helping to promote better consumer habits. You too on the farm can contribute to this stand against electricity waste by selecting energy-efficient machines and equipment and by using electricity more sparingly. Thus you will pave the way towards a more stable energy future and a better quality of life for us all.

The Macdonald Journal

DECEMBER 1979 / JANUARY 1980

Volume 40, No. 11
December, 1979
Volume 41, No. 1
January 1980

The Macdonald Journal is published by the Extension Program of the Faculty of Agriculture of Macdonald Campus of McGill University.

Material in this issue may be reprinted editorially without permission; however, credit to the Macdonald Journal would be appreciated. Address all inquiries re editorial matter, and subscriptions to the Editor and inquiries re advertising and other business to the Business Manager: Box 284, Macdonald Campus of McGill University, Ste. Anne de Bellevue, Quebec, H9X 1C0.

Second class mail registration number 0463.

Subscription rates are $3.00 for one year, $5.00 for two years, and $7.00 for three years in Canada. Outside Canada — $7.00 for two years.

Printed by Harpell's Press Cooperative, Gardenvale, Quebec.

In This Issue

Cover: This distinctive logo was designed especially for the 75th Anniversary of Macdonald. For more on the 75th, see the Editorial on Page 2.

Journal Jottings

Our colourful cover and Dr. Klinck's editorial say it all. In 1980 Macdonald will be celebrating its 75th anniversary with a series of special events such as those outlined in the editorial. Other "birthday party" ideas are being considered, and there are bound to be a few spontaneous happenings. Over the coming months we plan to keep you informed of functions that may be of particular interest to you, i.e., the College Royal and Livestock Show or the National and Provincial Plowing Matches. As well as letting you know ahead of time, we plan also to tell you what happened as planned events become past accomplishments. We have kept the 75th in mind when planning 1980 issues: we are working on three "Specials" — dairy, energy, and woodlot, and hope, through photos, editorials, and articles to play our part in keeping the "Spirit of Macdonald" alive.

If I may mention the College Royal again, the dates of which are February 27, 28, 29 and March 1 and 2, Journal readers have a special invitation from Professor Peter Schuepp to visit at that time (or any time) the laboratory of agricultural physics. The invitation is in his article "Physics on the Farm?" as is his comment that I requested a "small exposé". Good things do come in small packages and this article is a fine example, except for the concluding paragraph, which is too modest. Having read his piece, I am certain that the information that physicists such as Professor Schuepp are gathering will indeed play a major role in agriculture in the future.

To all contributors in '79 — our thanks; to them and to subscribers, new and old, may I extend

SEASON'S GREETINGS

Hazel M. Clarke

Editorial

"The Spirit of Macdonald"

Almost a quarter of a century has passed since the Semi-Centenary of Macdonald College was celebrated in 1955. In that year a two-day event featured a Special Convocation on June 3rd and a Symposium on June 4th. The Convocation Address entitled "The First Fifty Years" was delivered by Dr. W. H. Brittain and marked the end of his 21 years of service as Vice-Principal of Macdonald College and Dean of the Faculty of Agriculture. The Symposium, addressed by three internationally renowned speakers, focused attention on the tasks confronting Macdonald College over the next 50 years.

In 1980 Macdonald College will celebrate its 75th Anniversary, using as its theme "The Spirit of Macdonald". The Coordinating Committee charged with planning special activities has adopted a format which will extend celebrations over a 10-month period. This will provide maximum opportunity for participation by the College community, the alumni, and our urban, suburban, and rural friends and neighbours. In addition, Professor Helen Neilson is preparing a History of Macdonald College from 1955 to 1980, to supplement the book by J. F. Snell covering the period 1904 to 1955.

Members of the Coordinating Committee include Vice-Principal Lewis Lloyd, Professor Helen Neilson, Professor Pierre Jutras, Professor Harold Klinck, and Mr. Rudi Dallenbach. Sub-committees will organize the various activities. A distinctive logo (see cover) will appear on posters, letterheads, and other publicity material to draw attention to this Anniversary.

A special celebration of Founder's Day will initiate the year's activities. Sir William Macdonald, founder and benefactor of Macdonald College, was born on February 10, 1831, and it has been an annual tradition to honour his memory. It seems appropriate that our 75th Anniversary celebrations should begin on February 10, and Mr. Steve Olive and his committee are planning an activity that will be of interest to the entire Macdonald College "family".

February 29 and March 1 and 2 have been set aside for the College Royal and Livestock Show. This traditional open house is organized by the students with the assistance and encouragement of the College staff. The student chairman of the Royal is Mr. Randy Goodfellow, and Professor Henri Garino and his committee are assisting with the plans. This highlight event with demonstrations and displays provides a unique learning experience for the student body and an opportunity for the public to catch a glimpse of activities at Macdonald College.

Another significant event will be a series of three one-day symposia, with the theme "Agriculture 2000", being organized under the general chairmanship of Professor Clark Blackwood. Participants will be projecting future developments in Food Production (March 7 — Professor A. F. MacKenzie, Chairman), Food Processing (May 30 — Professor Ed Idziak, Chairman), and Food Marketing (October 3 — Professor Garth Coffin, Chairman). These sessions will have particular relevance to students in terms of career opportunities, as well as being of special interest to people in business, education, and government concerned with the food industry. Macdonald alumni will be involved as theme speakers.

Convocation ceremonies in 1980 will be held on Friday, June 6. Professor Alan Watson and his committee are developing plans for special activities associated with this event.

All roads will lead to the Macdonald College Farm when the National and Provincial Plowing Matches take place September 10-13. 1980. This is certain to attract several thousand visitors, both urban and rural, and again the College will be on display. Present plans of a committee chaired by Mr. Norman Campbell call for a large marquee to be erected on the site to house special booths demonstrating research, service, and teaching activities going on in the Faculty of Agriculture and its associated units.

Macdonald College will have display booths at the International Salon of Farm Machinery and Poultry Industries at Place Bonaventure, February 14-17, and at the International Salon of Food and Agriculture at the Olympic Stadium in October, 1980. Committee chairman Professor Pierre Jutras plans to prepare increased publicity material concerning current activities and opportunities for educational training at Macdonald College for distribution at the Salons.

The annual reunion of the Macdonald Graduates Society in 1980 is scheduled for Saturday, October 4. Mr. Larry Johnston is serving as the Society's liaison with the Coordinating Committee.

The final organized event to wind up the 75th Anniversary celebrations will be a special Memorial Assembly on November 11. Plans are in the hands of a committee chaired by Professor Norman Lawson.

Many details of the various functions have yet to be worked out, but they will be widely publicized as information becomes available. To this end a Publicity Committee, co-chaired by Professor Ted McKyes and Mr. Steve Olive, has been developing plans. Special physical arrangements necessary for the smooth operation of the special events on campus are the responsibility of Mr. Peter Knox, while Mr. Bill Shipley is coordinating the financial aspects.

With an active team at work on the 75th Anniversary celebrations, 1980 shows promise of being a year when the Spirit of Macdonald will be shown to be very much alive, and the achievements of another quarter century will have been duly acknowledged.

H. R. Klinck, Chairman
Coordinating Committee

The Basics of Green Manuring

by Professor P. Warman, Soil and Land Resources, Department of Renewable Resources

Green manuring is the practice of turning into the soil undecomposed green plant tissue. The function of a green manure crop is to add organic matter to the soil. As a result of the addition, the nitrogen supply of the soil may be increased and certain nutrients made more readily available, thereby increasing the productivity of the soil.

The practice of green manuring is very ancient. The Greeks turned under broad beans around 300 B.C., and the planting of beans and lupines for soil improvement was a common practice in the early years of the Roman Empire. The Chinese wrote about the fertilizing value of grass and weeds hundreds of years ago and the early colonists in North America commonly used buckwheat, oats, and rye to add organic matter to the soil. Farmers in the southeastern United States recognized early in the 18th century the value of green manure crops, especially the legumes, but the usage of green manure in North America peaked in the 1940s, with a notable decline in planted acreage since that time. With the current trend toward the use of "organic' fertilizers, many people are again looking at green manuring as an economical, practical, and even aesthetically pleasing method of restoring productivity to idle or overworked land.

Before you plant your field into sweet clover, however, I'd like to present some of the positive and negative aspects of green manuring as well as some soil science basics which I feel are necessary to the use of this method of fertilization.

Benefits of Green Manure

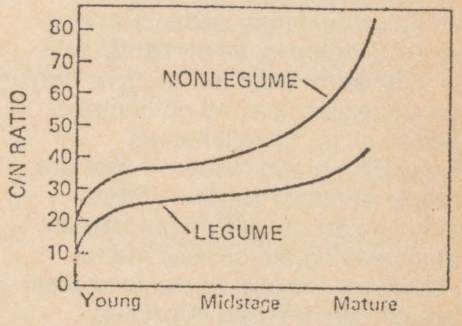
The major benefits to the use of green manures in a crop rotation system include organic matter and nitrogen addition, nutrient conservation, and protection of the soil surface during erosion-prone periods of the year.

Organic Matter and Nitrogen Addition — The amount of organic matter that may accumulate through the decay of plant material by the addition of green manures may be considerable. One to two tons of dry matter per acre (20-40 kg/100m^2) is not an unusual amount to be added (wet weight of green manure crops are 4-10 times the dry weight).

The organic matter added when young succulent plant tissue is incorporated into the soil encourages the microbial action of not only the heterotrophic microorganisms responsible for general organic matter decomposition but also the "free-living" organisms (e.g. Azotobacter, Clostridium) which are able to fix atmospheric nitrogen. The organic residues from green manures also help to stabilize the soil structure, increase the water holding capacity of the soil, and increase the infiltration of moisture into the soil and percolation through the soil.

Agronomists have argued that green manuring will increase either the humus content or the supply of available nitrogen in the soil, but rarely both at the same time. The humus content is only increased appreciably if material fairly resistant to decomposition is added to the soil (high **C**arbon:**N**itrogen ratio), and this type of plant material is typically low in nitrogen (less than 1.5 per cent on a dry-weight basis). The available nitrogen supply is only increased if readily decomposable material high in nitrogen, such as immature green plants, is incorporated into the soil. The amount of organic matter that may accumulate will vary with the soil, climatic conditions, and the age and type of crop.

The accompanying diagram shows that mature residues, whether legume or non-legume, have a much higher C:N ratio than do the younger succulent materials. Also, the legume crops, which have two to three times the nitrogen content of the non-legumes, have lower C:N ratios throughout their life cycles, and even if turned under when mature (e.g. 3rd year alfalfa, 2nd year clover) will yield their nitrogen more quickly than if oats or buckwheat straw were ploughed under.



The C/N ratio of organic residues added to soil will depend upon the maturity of the plants turned under. The older the plants, the wider will be the C/N ratio and the longer will be the period of nitrate suppression. Leguminous tissue will have a distinct advantage over non-legumes since the former will promote a more rapid organic turnover in soils.

Ref: N. C. Brady. Nature and Properties of Soils. 8th edition. MacMillan Publishing Inc. N.Y. p. 154

The non-legume supplies a large amount of energy (carbohydrate) material readily, but the bacteria responsible for the decay of this material must have access to N. If the N carried in the green manure crop isn't sufficient (that is, a C:N greater than 30:1, or less than 1.5 per cent), the bacteria will draw on the available soil N and may deplete it to such an extent as to ruin the following crop; for example, turning under a nearly ripe rye crop will act as a detriment to the following crop, but a sweet clover crop carries with it sufficient N for its decay, and this excess becomes available to the following crop. If there is a long wet period between the incorporation of the green manure crop and the establishment of the following crop, especially on warm, sandy soils, much of the available N from the green crop will be leached out of the soil, with little benefit to the

following crop. On the other hand, the main crop should not be sown too soon after the green manure has been turned under, since the initial stage of decomposition is very unfavourabe for germination and the growth of young plants. Therefore, the incorporation and subsequent decay of the green manure or cover crop should occur at the time when it will best serve as fertilizer for the crop it is to benefit.

Not all of the plant material turned under becomes part of the soil humus; a large part is lost as carbon dioxide during decay. Under some conditions, as on sandy soils in very warm weather, the loss may be excessive, leaving no contribution at all to the soil humus. Generally, green manure crops are not as effective as farmyard or animal manure, per unit of carbon, in increasing the organic matter content of the soil, because of their greater decomposability. On a Woburn sandy loam in England, researchers found 25 per cent of the carbon remained after 19 annual dressings of 25 t/ha farmyard manure, but only 14 per cent of the carbon remained when green manure was used, although it was estimated that 20 per cent less Org.-C/ha was incorporated as green manure. In Tennessee, Mooers found that 2.5 t/ha dry matter of cowpeas grown as an autumn catch crop in continuous wheat over a 20-year period decreased the soil organic matter content 0.11 per cent; whereas, a farmyard manure, also containing 2.5 t/ha dry matter increased soil organic matter 0.11 per cent. On the other hand, researchers in Ohio found that sweet clover in a two-year rotation of corn followed by oats seeded with sweet clover maintained the productivity of the soil and produced as high yields of corn as were obtained by ploughing under 6 t/a (12.4 tonnes/ha) of manure or applying commercial N up to, at times, as much as 100 lbs/a (110kg/ha).

Additional Nutrients Added — Some green manure crops may utilize less available forms of phosphate and micronutrients than the main crop in a rotation: hence, when they are ploughed under, they may increase the availability of some nutrients for the subsequent crop (a concept which is being evaluated at Madonald College for the 1978 buckwheat crop). In addition, by decomposing rapidly, the plant residues liberate large quantities of carbon dioxide and weak acids, which act on insoluble soil minerals to release nutrients for plant growth. The increase in the availability of phosphates in soils high in calcium is a good example of this effect. Since green manure crops are rarely fertilized, their value is strongly dependent on their ability to use available nutrients in the soil. Alfalfa and sweet clover, for example, have high calcium, potassium, and phosphorus requirements, and most legumes have higher than average requirements for the micronutrients boron, molybdenum, and cobalt. Most green manure crops respond well to some fertilization.

Nutrient and Soil Conservation — These two other benefits of green manuring are closely related. Since green manure crops are often sown in the late summer or fall after a primary crop, the green manure cover or catch crop utilizes excess fertilizer not taken up by the main crop. When these catch crops are incorporated into the soil the following spring, rather than harvested, they not only protect the soil from erosion attributed to fall and early spring rains and winter runoff, they also conserve nutrients which might have leached away or contributed to the contamination of streams and lakes.

Plants Suitable as Green Manures

Generally, ideal green manure crops should:
- —be inexpensive to plant;
- —be easily established;
- —produce succulent tops and roots rapidly;
- —generate good ground cover quickly;
- —be capable of growing on poor soils (sands and clays benefit most).

It is more advantageous to seed a legume than a non-legume because of the nitrogen gained by the soil; however, generally the legume seed is more expensive, it is more difficult to establish, and the crop may be so valuable as animal feed that one would not want to turn the stand under.

The most suitable crops for use as green manures in Canada are listed in the accompanying table titled Typical Green Manure Crops. I have modified the table originally presented in the Garden Way Publication on "Green Manures" to be more suitable for our Canadian climate. Even so, some of the crops are unsuited to certain soils or climatic regions; whereas, other crops are too valuable for haylage to be ploughed under in an immature stage.

There are certain advantages to growing two crops together for green manuring. If both crops are adapted to soil and climatic requirements, and to each other, both crops may gain by the association. One crop may offer physical support to the other. If one is a legume, the fixed nitrogen might benefit the other. Good examples of green manure combinations are oats and peas, and rye and vetch. This concept of companion planting is being more widely investigated, although it is not a new practice.

Inoculation of Legumes

The inoculation of leguminous plants is the practice of introducing bacteria into the soil which are capable of fixing free nitrogen from the soil air and eventually transferring this N to the host plant, thereby increasing crop production and improving the soil organic matter content.

Legume bacteria are single-celled microorganisms which are highly selective. Legume seeds may be innoculated with N-fixing bacteria by the use of commercially available pure cultures or by use of soil from a field that has recently grown the crop it is desired to inoculate. As the roots of the plant develop, the bacteria enter the root hairs and cause nodules to be formed. The legume supplies food in the form of a carbohydrate energy to the bacteria and in return the bacteria furnish nitrogen to the plant when they die.

Leguminous plants are arranged in groups of cross-inoculation bacteria. One species of nodule bacteria will successfully nodulate each member of a given group. The nodule bacteria that work on alfalfa and

TYPICAL GREEN MANURE CROPS

Common Name	Legume	Soil Preference	Lime Requirements Low, Med. or High	Relative longevity of seed (Long, Med. or Short)	Seeding rate (lbs per 1000 sq. ft) or (KG per 200 m²)	Depth to cover seed (cm)	When to Sow	When to turn under	Comments
ALFALFA	Yes	Loams	H	L	1/3	2/3	Spring	Summer or Fall	Prefers well-drained soils of high water holding capacity. Highest N fixation
BARLEY	No	Loams	L	L	2-1/2	1-1/2	Spring	Summer	Not good on sandy or acid soils
BEANS, garden, field	Yes	Loams	M	S	2-1/2	3	Spring	Summer	Warm weather crops. Do not sow until ground is warm and weather settled
BROMEGRASS	No	Widely Adaptable	L	L	1	1	Fall or Spring	Spring or Fall	Good winter cover. Easy to establish. Hardier than rye. More heat tolerant
BUCKWHEAT	No	" "	L	L	1-1/2	1-1/2	Late spring or summer	Summer or Fall	Quick growing. Survives on the poorest soils. Plant only after ground is warm
CLOVER — Alsike	Yes	Heavy loams	M	L	1/8	1	Spring or Fall	Fall or Spring	Less sensitive to soil acidity and poorly drained soils than most clovers
— Ladino	Yes	Sandy Loams	M	L	1/4	1	Spring	Fall	
— Red	Yes	Loams	M	M	1/4	1	Spring	Fall	
— White Dutch	Yes	Heavy Loams	M	M	1/8	1	Spring or late summer	Fall	Good cover crop; long-lived, shallow-rooted
CORN	No	Widely Adaptable	L	M	2-1/2	2	Spring or Summer	Summer	Do not sow until ground is warm
KALE, Scotch	No	Widely Adaptable	H	L	1/4	1	Summer or Fall	Spring	Can be eaten after serving as winter cover. Interplant with winter rye for protection. Plant in summer for good growth before frost.
LUPINE — White — and Yellow	Yes	Sandy Loams	L	S	2-1/2	2	Spring, Fall	Summer, Spring	Difficult to establish. Seed costly
MILLET	No	Loams	L	L	1	1	Late spring or summer	Summer or Fall	Requires warm ground
MUSTARD, White	No	Loams			1/4	1/2	Spring	Summer	Fast growing
OATS	No	Widely Adaptable	L	L	2-1/2	2	Spring	Summer	Fast establishment, ease of availability
PEA, field	Yes	Heavy Loams	M	S	2-1/2	3	Early spring	Summer	Distinctly a cool weather crop
RAPE	No	Loams	L	L	1/4	1/2	Spring or Summer	Summer or Fall	
RYE, Spring	No	Widely Adaptable	L	L	2	1-1/2	Spring	Summer	
RYE, Winter	No	Widely Adaptable	L	L	2	1-1/2	Fall	Spring	One of the most important winter cover crops
RYEGRASS, Italian	No	Widely Adaptable	L	L	1	1-1/2	Spring	Summer	
SUDAN-GRASS	No	Widely Adaptable	L	L	1	1-1/2	Late Spring or summer	Summer or Fall	Rapid grower. Do not sow until ground is warm and weather settled
SUNFLOWER	No	Widely Adaptable	L	L	3/4	1-1/2	Spring or Summer	Summer or Fall	Intolerant of acid soils
SWEET CLOVER — Common white	Yes	Heavy Loams	H	L	1/2	1	Spring	Fall or Spring	Quite winter hardy
— Annual, white (Hubam)	Yes	Loams	H	L	1/2	1	Spring	Fall	A true annual. Best results from spring sowings
— Yellow	Yes	Widely Adaptable	H	L	1/2	1	Spring	Fall or Spring	Stands dry conditions better than common white sweet clover
VETCH, hairy	Yes	Widely Adaptable	L	L	1-1/2	1-1/2	Spring Fall	Fall or Spring	The hardiest winter vetch. Best sown in fall with winter rye or winter wheat
WHEAT, Winter	No	Loams	L	L	2-1/2	1-1/2	Fall	Spring	

sweet clover, for example, will not successfully nodulate any other legume. **Each cross-inoculation group requires its own special inoculant.**

Groups of cross-inoculation bacteria which are recognized are:

Alfalfa group — alfalfa, yellow, and white sweet clover
Clover group — common clovers such as alsike, red, and white
Pea group — field, garden, and sweet pea, hairy vetch, broad bean, lentil
Bean group — garden and field beans
Lupine group — blue and yellow lupine, serradella
Soybean group — soybeans
Cowpea group — cowpea, lima bean, peanut
Lotus group — birdsfoot trefoil and other lotus species

When a mixture of seed is to be sown, each type of seed must receive its own inoculant. Several manufacturers produce a mixed in-

oculant containing bacteria suitable for the inoculation of garden legumes (peas, beans) or for plants in both the alfalfa and clover cross-inoculation groups.

For example, Legume-Aid® or other seed inoculants are available from Stokes Seeds Ltd., William Dam Seeds, Bishop Farm Seeds, J. Labonté & Fils, and others.

NOTE: Seeds treated with dusts containing copper or mercury compounds are not suitable for inoculation because of toxicity towards the bacteria. Also, the fertilizers which cannot safely be mixed with inoculated seed include superphosphate, ammonium sulfate, sodium nitrate, muriate of potash, and potassium sulfate. Lime, superphosphate mixed with equal quantities of lime, and rock phosphates are considered safe. For more information on legume seed inoculation refer to Ontario Ministry of Agriculture and Food Publication No. 212.

Anyone who plans to grow a legume crop without making use of the specialized inoculum is sorely misquided. Not only is the inoculum easy to apply, it is considerably cheaper than nitrogen fertilizer. The only difficulty I have found in using inoculum is finding it! There are many seed companies which sell garden and field legumes, but don't carry the inoculum. Some seed dealers have the appropriate inoculum for the species, but they "forget" to mention it when you purchase. Make sure you ask for it when you buy, and save yourself the money which you would have to spend on N fertilizer.

The amount of nitrogen fixed by the legume bacteria depends on the physical and chemical conditions of the soil. The prime conditions are the drainage, aeration, moisture, pH, active calcium, and the amount of readily available N in the soil.

Not all legumes fix the same amount of N. An average crop of alfalfa might fix 200-250 kg/ha/yr; sweet clover, 150-175 kg/ha/yr; red clover, 100-150 kg/ha/yr; soybeans, 80-100 kg/ha/yr; beans, 50-60 kg/ha/yr, and peas 40-50 kg/ha/yr.

Bishop Farm Seeds (P.O. Box 338, Belleville, Ontario) has introduced for 1979 a green manure mix called Bearss Plow-Down Mixture. The pre-inoculated mixture consists of 60 per cent Red Clover, 20 per cent Yellow Sweet Clover, and 20 per cent Ryegrass. I am sure other seed companies have mixtures designed for green manure ploughdown. It is possible for you to buy your own components and mix them to suit yourself. J. Labonte & Fils Inc. in Longueuil is an example of one source that has a wide variety of green manure type seeds in stock.

Problems with Green Manures

There are potentially some problems with the use of green manures. These are:

- Tilling in a heavy non-leguminous crop with a high C:N ratio can result in a depressed nitrogen uptake by the following crop.
- In areas of low rainfall, green manure crops may deplete soil moisture to the point that the succeeding main crop will suffer from drought.
- Depending on the soil, the green manure crop, and the rotation, succeeding crops may not benefit from the expense, time, and energy devoted to green manuring.
- On land of high market value, giving over the entire cropping season to green manure crops is seldom profitable. **However,** it is justified when the following crop is fairly permanent and the establishment and good growth of the seedlings or young plants are of prime importance, e.g. for orchards or lawns. In addition, with the cost of N fertilizer increasing at 20 per cent plus per year, and the quality of our soils deteriorating under monoculture cropping, green manuring might just be the best method of saving our good farmland.

If the reader is unfamiliar with some of the terms or concepts which I have presented in this article, please refer to any standard Soil Science or Field Crop Production text book. In addition, the best and most complete book on green manures was published in 1927 by A. J. Pieters. Your local library may still have a copy.

References

1. BRADY, N. C. 1974. The Nature and Property of Soils. MacMillan Publ. Co. Inc., N.Y. 8th Ed.
2. CHATER, M. and J.K.R. Gasser, 1970. J. Soil Sci. 21: 127-137.
3. JORDAN, D. C. 1975. Legume Seed Inoculation. Ont. Min. of Agr. & Food. Publ. No. 212.
4. MOOERS, C. A. 1927. Tenn. Agric. Expt. Sta. Bull. No. 137.
5. PIETERS, A. J. 1927. Green Manuring. John Wiley & Sons, Inc. N.Y.
6. RUSSELL, E. W. 1973. Soil Conditions and Plant Growth. Longman Gp. Ltd. N.Y. 10th Ed.
7. WILLIARD, C. J. and E. E. Barnes, 1959. Ohio Agric. Expt. Sta. Bull. No. 839.
8. WOLFE, T. K. and M. S. Kipps, 1959. Production of Field Crops. McGraw-Hill Book Co. Inc. N.Y. 5th Ed.

COLLEGE ROYAL

The 1980 version of the College Royal and Livestock Show, a student organized open house, will be held February 27 through March 2. This year, the Royal will share, along with the 75th Anniversary Committee, the theme of agriculture in the future.

Students in the various agricultural disciplines will display to the general public exactly what we are doing here at Mac. As well as the displays housed in the new Macdonald-Stewart Building and the Raymond Building, the annual Livestock Show will be held in the dairy barn's show ring. This keen competition will begin Friday noon with the preliminary classes and recommence Saturday morning with the championship classes. At intervals throughout the Show, different classes of the Intercollegiate Judging Competitions will take place.

Friday, February 29, has been especially planned as the day for receiving visitors from high schools and CEGEPS. This would be an opportune time for students planning to further their education in agriculture to drop in and visit.

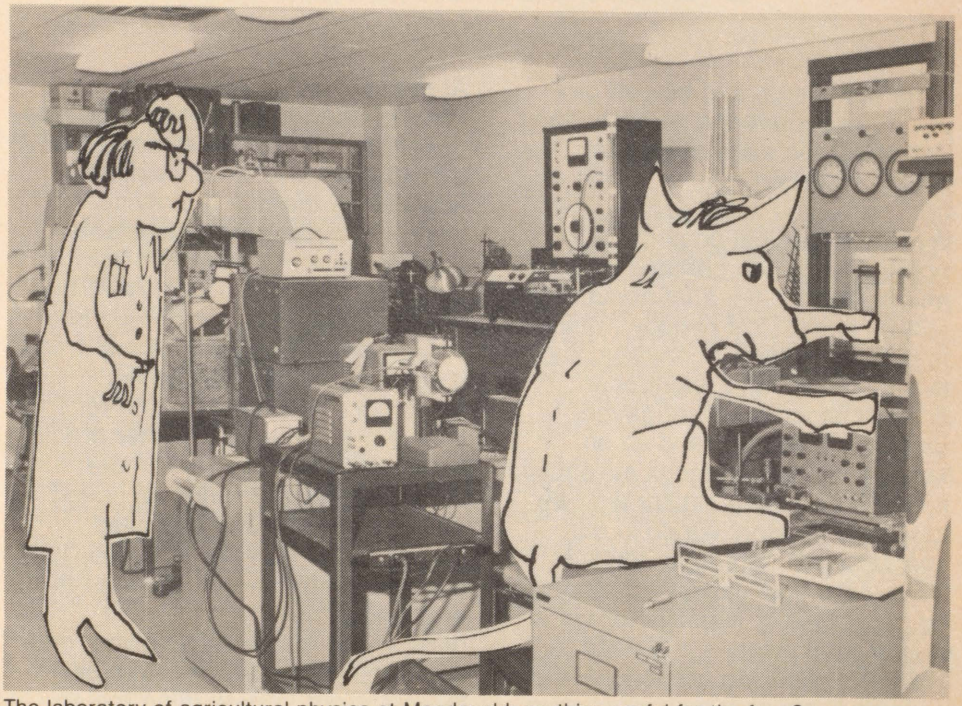
There will also be many activities of interest to the rural community. Besides the Livestock Show and displays, we will be sponsoring speakers who will be discussing current agricultural issues.

Hope to see you at the College Royal.

Randal Goodfellow,
Chairman, College Royal and
third year Agriculture student.

Physics on the Farm?

by Professor P. H. Schuepp
Department of Agricultural Chemistry and Physics



The laboratory of agricultural physics at Macdonald: anything useful for the farm?

It is probably fair to assume that most of the readers of this journal have some acquaintance with the Macdonald campus, be it as occasional visitors or perhaps as former students. And so it may already have happened — or it may happen at the next Macdonald Royal or some similar occasion — you entered the laboratory of agricultural physics and, frank as you are, you might have asked, "what on earth has all this to do with agriculture?".

I will admit that, at first sight, our research laboratory and our displays at the College Royal tend to look a bit sterile when compared to the displays on, say, artificial insemination or parasite-ravaged fruits with which other departments try to impress the visitor. And, frankly speaking, some of our students wonder occasionally if they would not be more profitably enrolled in a course on something like beekeeping or welding. For this reason I am glad that our editor has asked for a small exposé (she emphasized the word **small**) to give us a chance to justify our existence on the Mac campus to you, the reader, and through you to the agricultural community at large.

Please forgive me if I start with a short scholarly introduction: Physics, as a science, tries to understand all phenomena of nature, from the movements of atoms to the formation of stars and galaxies. In principle, therefore, it is easy to see that there might be physicists who are interested in those processes of plant and animal growth, the processing of food and the maintenance of life in a hostile environment, with which we, at Macdonald, are all concerned. Now, obviously, farmers have known how to grow food long before anybody called himself a physicist, and it is clear that mankind would have survived if no physicist had ever existed. But think for a moment what a difference it would have made if no physicist had ever studied the path of light in glass: no microscope would have been developed, Louis Pasteur would not have been able to look at bacteria, most drugs against disease would not have been developed, and many of us would not be alive today.

Thus, before you pass judgment on the use of physics in agriculture, consider also these hidden contributions through the development of instruments for biology and chemistry and, through these fields, for agriculture. It is unfortunate that many people think of physics in terms of a misused technology, forgetting the beneficial effects in the control of disease and increase in fertility of plants.

However, not all physicists develop instruments and, in fact, at Macdonald, as at many similar institutions, we do something entirely different. Let us look at a crop through the eyes of a physicist: The plants grow because they can use gases in the air, together with nutrients from the soil, to produce plant material. The energy to do this comes from the sun. One acre of a crop may receive something like four million watts of power from the sun at noon. Up to 40 kilograms (88 pounds) of carbon dioxide gas and four tons of water vapour may be transferred between plants and air from one acre per hour. It is these figures which ultimately tell you how well the crop is doing and how much plant material is being produced every hour. Obviously, the magnitude of this gas exchange between plants and air depends on the weather and for this reason this branch of science is called **agrometeorology.**

An agrometeorologist tries to understand these exchange processes between plants and air so that, given certain weather conditions, soil type, plant variety, and management techniques, the development of the crop can be predicted with some accuracy. Who cares you might ask. A farmer just

looks at his crop and he can give you, from experience, a pretty good idea about the state of his crop. You would be correct, but — to use an analogy — you might just as well say that a medical doctor, just by looking at you and perhaps feeling your pulse, can tell a lot about your general health. Yet nobody would deny that the tools of physics, such as X-ray equipment, electrocardiogram, blood-pressure gauge, ultrasonic scanners, and so on, have permitted enormous advances in health care. In a similar way we hope that the work we do in our laboratory will contribute toward much more precise ways of assessing the stages of development of a crop or crop disease, the need for treatment (spraying, irrigation), and for large-scale economic prediction.

Plant growth is a very complex process and no researcher is able to investigate by himself all aspects of a given problem. If you take a tour of our laboratory, which you are very welcome to do, you will get the impression that we are looking at very specific, detailed questions which, by themselves, are not likely to produce an answer of direct use to the farmer. Questions such as how the temperatures within a crop differ from those over an open field at any given time, how the shapes of leaves and plants affect their exchange of heat and gas in air, how effective leaves and pine needles are in filtering out air pollutions, how ions (small, electrically charged particles in air) affect plant disease, to what extent the absorption of small, fast radioactive particles by plants can be used to determine their water and dry matter content, and so on. To become useful to the agricultural community, the results of such studies must be combined with further information, particularly biological, and often the eventual application cannot be clearly foreseen.

At present, in Canada, the government is using the results of this type of studies in a variety of ways: Better projections of crop yield, particularly for the prairie provinces, are made based on the available weather data. Reductions of between 30 and 50 per cent have been demonstrated in pesticide use in orchards and vegetable-growing areas if agrometeorologically based predictions on optimum time for spraying are followed. Better predictions of fire hazards for remote areas are being developed, based on weather data and improved knowledge of how water vapour is lost from forests to air. Another interesting project, in which our department is directly involved, concerns the possibility of using low-flying aircraft to determine the actual growth rate of a crop. It would be based on measurements of carbon dioxide concentrations and vertical air movement and, if successful, would allow fast, large-scale assessment of crop "performance" without waiting for the next harvest to reveal success or failure of different crop mangement techniques.

As you see, most of these projects are still in a stage of development. But agrometeorology is a new field of science, perhaps about 20 years old, and you will undoubtedly see more of it in the future. Furthermore, all applications mentioned so far are by government agencies or institutes, and there is a reason for that: The tools of physics, in this day and age, are often bulky and expensive. Just as a biologist does not have an electron microscope in his office or a doctor cancer-treating radiation facilities in his backyard, the putting together of agrometeorological information into a useful product and bringing that product to the consumer, i. e., ultimately the farmer, requires cooperation of skilled personnel, such as data handlers, computer specialists, etc., and the government is more able to provide these.

Just to give you an idea as to how agrometeorological information may ultimately be used by the farmer, I will mention the small, battery-operated microcomputer that has recently been developed in the United States for late blight prediction in potatoes. It is now operationally available for certain regions of the country (New England States) for about $1000, can be installed in the potato fields, takes all the meteorological observations, evaluates them, and prints out instructions to the farmer on the advisability of spraying. Some readers may be familiar with a similar government-operated system, using a central computer, operating in some parts of Canada. If the economies realized by such procedures are substantial and if the cost of electronic devices continues to drop, there will be a growing market in this field. Needless to say, much along similar lines is being done in arid regions to economize on the use of water for irrigation.

So the next time you ask yourself what physics has done for the farm, consider that we may have at least a few irons in the fire. With a growing shortage of cheap energy, we will be forced to operate with a much better understanding of energy relationships, optimized treatments and practices, and the information we are gathering, piece by piece, just may come in handy somewhere.

Selection of Replacement Females

by Professor James P. Mahone
Department of Animal Science

In a successful swine operation it is essential that the sow herd wean large litters of pigs regularly. This means that a large percentage of the sows and gilts come into heat (estrus), become pregnant, farrow large litters of healthy piglets, keep a high percentage of the pigs alive, and get their pigs off to a good start. Obviously, close supervision of the sow herd is required to maintain high levels of reproductive efficiency. This article will consider those elements essential to selecting females that will do the job.

Three general areas need to be critically evaluated in choosing replacement sows or gilts. These are:

1. Production characteristics;
2. Maternal reproductive characteristics;
3. Individual reproductive characteristics.

These traits are affected in large part by environmental situation and management with the ability of the producer to exert genetic selection pressure varying with the specific trait.

Production Characteristics

These include rate of gain, backfat thickness, and feed efficiency. The fastest growing, leanest gilts which are sound and from large litters should be saved for replacement females. The gilts should be weighed and backfat probed as they approach market weight. Ear notching, along with a written record of birth date and litter size, would meet the record-keeping needs of the selection program. Less complex identification systems can be used if they provide a method of identifying gilts from large litters and allow age determination at the time the gilts are weighed and backfat probed. Because selection among gilts for gain and backfat thickness is much more effective and direct than selection for reproductive traits, there is an important advantage to weighing and probing the gilts. To compare the gilts accurately, weights should be standardized for age and backfat standardized for weight. Backfat should be measured rather than visually appraised. Backfat thickness can be measured very easily and accurately with a probe or an ultrasonic scanning device.

Standardization of weight for age can be done most easily by assuming a daily gain of 2 lb. at the time of evaluation. If the gilts are weighed and probed at about 180-200 lb., the data could be adjusted to a 200-lb standard. Add one half day to the gilt's age for each pound that she weighs below 200. Deduct one half day for each pound over 200. Average backfat thickness should be adjusted by adding 0.004 in. of fat for every pound below the standard and by deducting 0.004 in. of fat for every pound over the standard.

Maternal Reproductive Characteristics

Litter size and litter weaning weight are genetic traits of the gilt's mother. Selecting replacement gilts based on these characteristics is, in actuality, selecting on the mothers' performance. This reduces the amount of genetic improvement that can be brought about through the gilt. However, economically important reproductive characteristics can be maintained by careful selection. The desirable factors to look for from the mother's standpoint are 1) attainment of puberty at an early age, 2) large litter size, particularly by the time the third litter has been born, 3) ability to conceive during the first post weaning estrus and 4) high levels of milking performance as determined by weight gain of piglets.

Implicit in the selection process is the maintenance of records adequate to provide sufficient information. To fairly evaluate the genetic potential of the sow, optimal environment conditions and management techniques must be employed.

To fairly evaluate the sow, careful attention to estrus detection, insemination with fertile sperm or mating to fertile boars at the proper time, and proper evaluation of milk production must be performed.

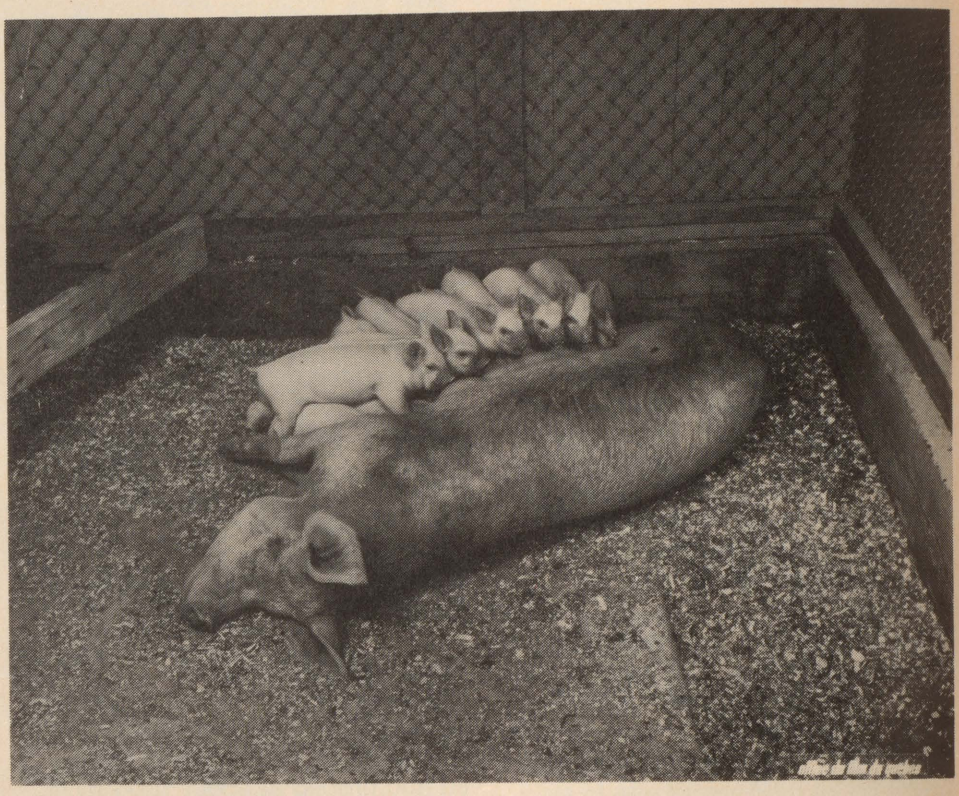
Cross-fostering piglets to equalize litter size, hand feeding weak piglets, and timely treatment of health problems all contribute to reducing environmental-management variations, and assist in the fair evaluation of milking potential of the mother of the prospective gilt.

Evaluating maternal performance early is supported by two types of rationale. First, before three weeks of age, the pig relies almost entirely on the sow as a source of nutrients. Under usual production practices there is no alternative. After the third week the litter's need for nutrients often surpasses the sow's ability to produce milk. After the third week, the pigs can turn to dry feed to meet part or all of their needs.

Second, the most current research in this area indicates that heavy pig weights up through four weeks in-

dicate high levels of milk production. This is because pigs of poor milking sows start creep feed earlier and eat more dry feed. Many producers wean pigs at three weeks of age; hence, evaluation of sow milking performance should be made at about three weeks of age.

Since fairly low rates of sow culling are suggested and equalizing the size of litters is expected, evaluation of sow performance should identify those sows that obviously are milking poorly. Sows that are slow to come to their milk, have light pigs at three weeks or whose pigs die because of too little milk should be marked for culling.



Individual Reproductive Characteristics

Selection of individual females for inclusion in the sow herd should be based on evaluation of the following areas:

1. Normalcy of external genitalia;
2. Mammary soundness;
3. Structural soundness;
4. Age of first estrus and ability to conceive;
5. Litter size at second pregnancy.

Normalcy of external genitalia. Unfortunately, most anatomical defects in the female reproductive system are internal and cannot be observed. Soundness of external genitalia can be determined as early as five months in the case of the vulva examination. Gilts with infantile or abnormal vulvas should be culled.

Mammary soundness. Replacement gilts should possess six functional teats on each side with well-spaced udder sections. Females with inverted or scarred nipples should not be saved. New concrete, rough floors, and corrosive chemical compounds on the floors of farrowing houses can cause abrasions to gilts' underlines which result in nonfunctional teats. Normal development is indicated by increased prominence of the gilt's underline as she approaches puberty.

Skeletal soundness. Cull gilts with feet and leg problems which will interfere with normal breeding, farrowing, and nursing. Those that are unable to get up and down in farrowing crates should be removed from the herd.

Age at first estrus and ability to conceive. Ideally gilts can be expected to reach puberty by eight (or younger if well managed) months of age and can be bred on their second estrus period. Normal estrus cycle length is 21 days; therefore, animals exhibiting long periods between estrus or that are unable to become pregnant when bred to fertile boars should be culled.

Litter size at second pregnancy. Most gilts will be almost two years old by their third litter and will also have achieved the maximum number of piglets at this time. Those farrowing less than 10 live healthy piglets at this stage should be culled. The most desirable situation is to evaluate females at second farrowing and retain those with large litter size. This is possible with excellent management practices.

While little direct genetic improvement can be made with regard to reproductive performance by selection of the replacement female, it is possible to eliminate certain obviously infertile or subfertile animals. At the same time, selection pressure can be successfully exerted on economically important production characteristics such as backfat thickness, rate of gain, and feed efficiency.

by Claude Travers

BLAIR FARM — POTENTIAL MODEL FOR FARMING MARGINAL LAND

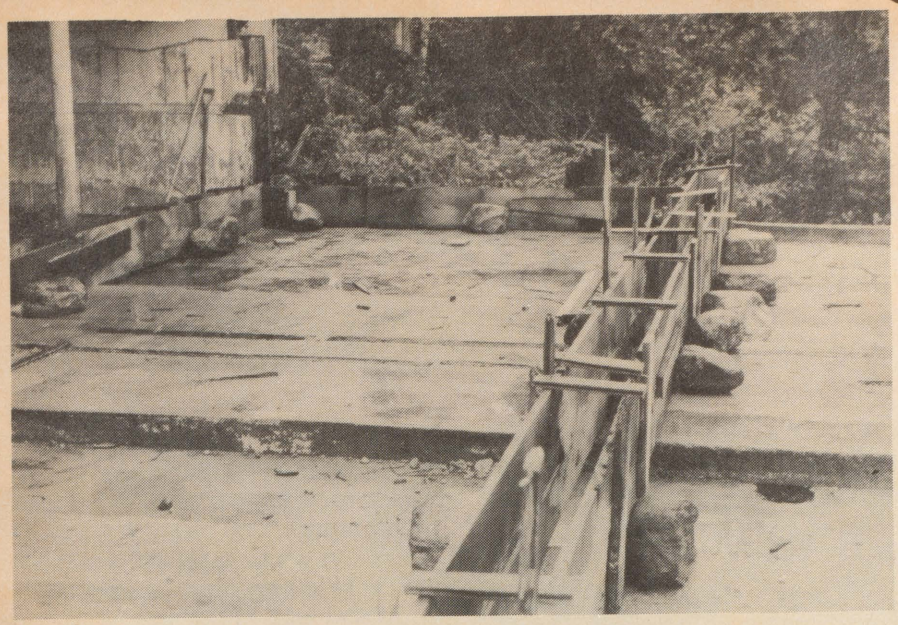
Blair Farm is a 390-acre farm located about seven miles south of Ormstown. It has 40 acres of cleared land which is infertile and very stony, and the remainder is in hardwood bush including a very good 35-acre stand of sugar maples. In his will, Roy Blair stated that his farm was to be donated to Macdonald College, and this was done in 1973. Roy Blair, a somewhat eccentric but independent and resourceful character, wanted the farm to be used to demonstrate in a practical one family farm situation what could be done to make agriculture and woodlot practices on marginal land profitable.

Renovated Blair house.

After much discussion and some conflicts, Blair Farm received sufficient funding from Macdonald College in April, 1978, to begin operations as a producing farm. The "Blair Farm Management Committee" made up of Dean L. E. Lloyd, Professor Philip Warman as a director of the project, Professor A. R. C. Jones (both from the Department of Renewable Resources), and a farm manager was formed. The project was organized as a five-year plan with very specific objectives established for each year while operating on a limited budget to duplicate as closely as possible the situation in which an individual, with limited financial resources, might find himself.

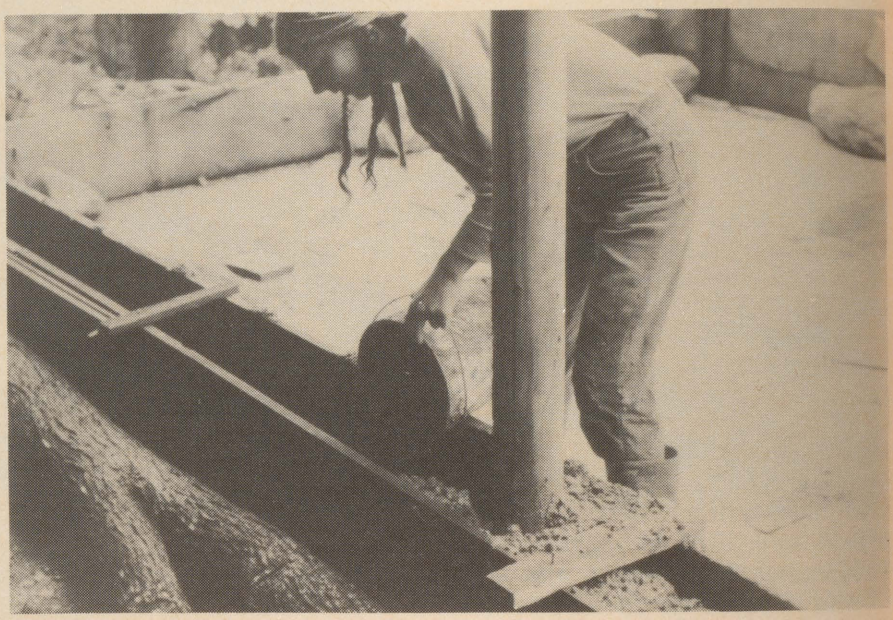
In 1978, Dick Keeler, a diploma graduate from Macdonald College, was hired on full time after having worked part time as caretaker since 1975. The first year it was his job to set up taps and saplines in the 35-acre sugar maple bush; plough, disc, harrow, and plant 10 acres of buckwheat; install fencing; disassemble unusable buildings and repair usable ones; transplant, thin and plant blackberry and raspberry canes, strawberry and blueberry plants; clear fallen trees from the woodlot as well as cut, split, and transport the wood to potential buyers.

In the spring of 1979, Dick Keeler left the farm and was replaced by Bart Hall-Beyer as farm manager. Bart has also been involved in clearing fallen trees from the sugar bush and cutting, splitting, and hauling the firewood to Macdonald three times a week. As he must keep going further into the bush to bring out the culled trees with considerably more labour involved, it may make more economic sense in the future to sell the remaining culled or fallen hardwood trees as saw logs and discontinue the firewood operation. Tapping, pump, and feeder lines are

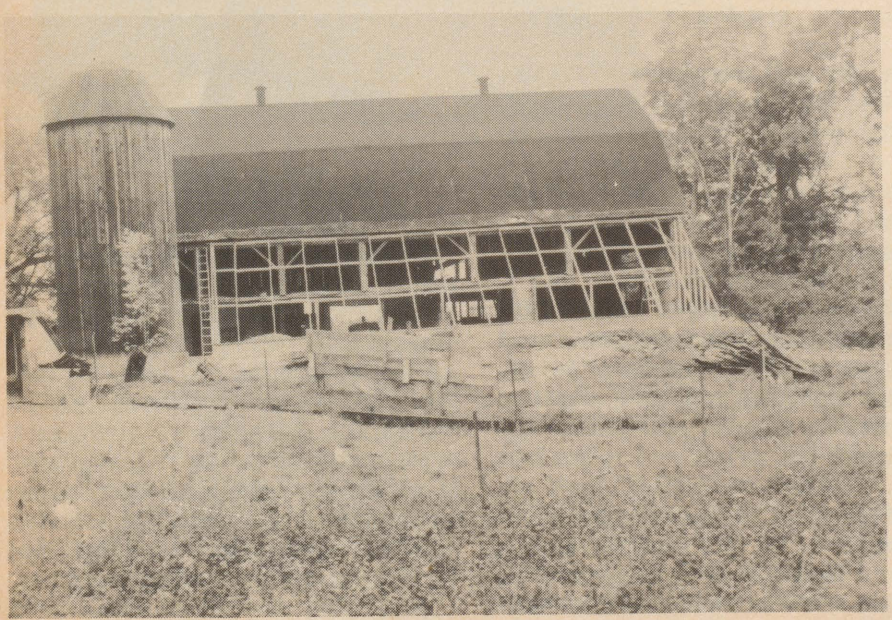


The 4 m by 18 m greenhouse, which is being built on one side of the existing barn, has been a do-it-yourself project. Most things were done by hand, including building the concrete forms and pouring the concrete. Monique Scholz, below, a Macdonald Diploma graduate, lends a hand. The completed framework is shown in the bottom photo.

set up in late winter and the sap is sold to a local maple syrup producer. Although plans call for the erection of a sugar shack in 1980, there is some doubt as to whether this will ever come about. For a small operator, the high cost of setting up the boiling equipment may never offset the return. Other sources of revenue have been the sale of hay and of eggs from about 120 laying hens.

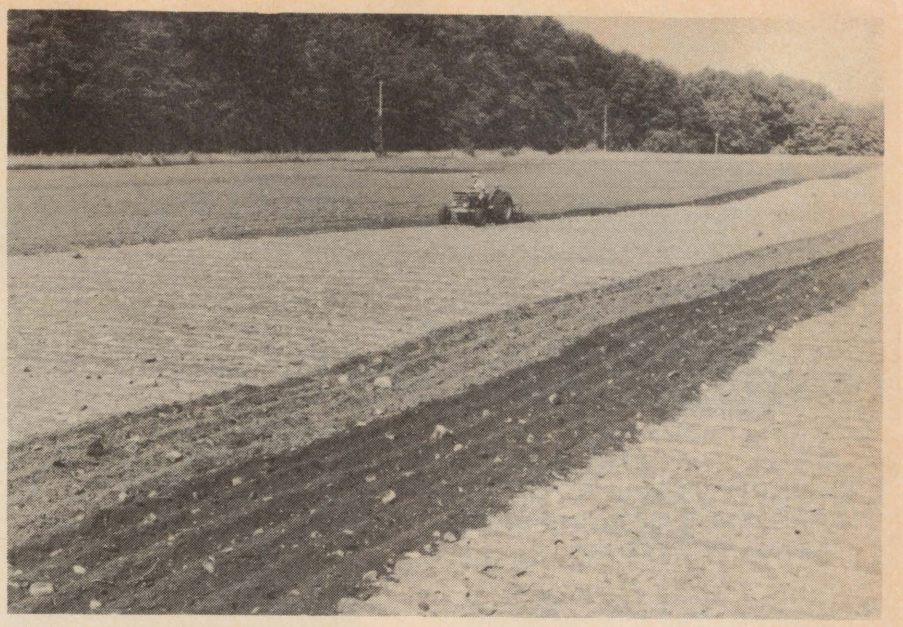


Plans for 1979 included the setting up of an apiary and the construction of a greenhouse. The setting up of the apiary has been delayed but as of the end of October, 1979, the greenhouse was nearing completion. The plan is to grow vegetable plants and flowers and to market them either through roadside stands in the local area or around Valleyfield or to tap the more lucrative market of Montreal, especially the flower shops.



It is expected that berry sales will begin in 1980 or 1981 at the latest. A five-acre site has been set aside for the planting of pear trees, this project to be totally subsidized by the provincial and federal governments. As part of the chronological development of Blair Farm, goats were to be brought in in 1980. Although this idea has not been put aside, there seems to be some doubt about raising animals on a farm where the land is so poor. The energy and inputs required to bring the land back to a resonably pro-

Much of the terrain on Blair Farm is quite undulating and very stony — the photo at right shows Franklin gravel being cultivated. Below: raspberry plants on sandy soil and sloping terrain are intercropped with clover for weed and erosion control. The bottom photo shows part of the 120 laying hens which are housed in this coop and fenced in area.



use of Blair Farm as a renewable energy demonstration site. Wood, wind, and solar energy demonstration units would be integrated to show visitors the possibilities of reducing energy consumption. As a demonstration of this, plans are afoot for heating the new greenhouse by burning woodchips. The chips would be stored in the silo. The only drawback to this may be the cost of renting or buying a wood chipper capable of handling trees of a fairly large diameter. Although this question has not yet been resolved, the fact that wood is very plentiful and that the cost of a wood burning stove is relatively low makes the project very attractive.

Professor Warman expects that by 1982 all aspects of the development

ductive level and to keep it there or alternatively the high cost of animal feed may make the investment in any animal enterprise, at least on marginal farmland, unrealistic.

As well as the day-to-day operations on the farm, a major National Research Council research project is underway at two sites on the farm. It is a three-year project testing the effects of the insecticide Endosulfan Sulfate (Thiodan) on long-term soil fertility. Money has recently been granted from NRC for a second project "To Determine The Economic and Agronomic Feasibility of Improving Soil Productivity for Corn Production Using Green Manures and Intercropping". In addition, a proposal will be submitted to the provincial government for the

plan for the farm will have been put into effect. The questions at this point will be "is the enterprise profitable?" and "can it legitimately be used as a model?". Professor Warman admitted that because of the salary paid to the farm manager, Blair Farm is not now in the black and probably would not be for many years to come. He pointed out, however, that there were certain problems unique to this farm and to the management situation.

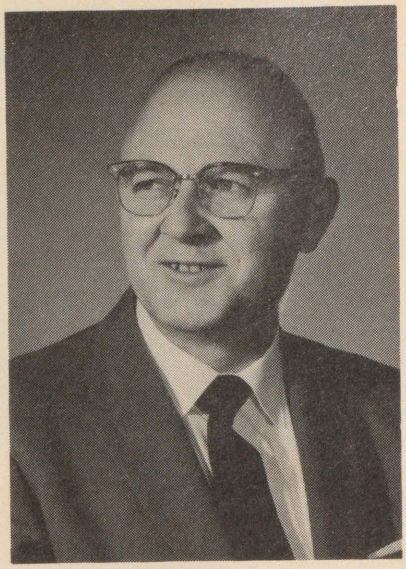
Firstly, the farm was in a very run down condition and had not been actively farmed for 10 years. There were virtually no tools or farm implements which were still usable. The barn was dilapidated and could not be used to house animals. Most family farms would not be in this condition and the work and money required to revive Blair Farm would not have to be invested under normal conditions. Secondly, the Blair Farm project operates on limited financing through Macdonald. An individual, at least through loans, would have access to more financing and could embark on projects on a larger scale. The economies of scale suggest that he could make his enterprise profitable much more quickly.

Even if Blair Farm never makes a profit, there will no doubt be some valuable lessons learned about farming marginal land. These lessons may be as much what enterprises to avoid as much as what to get into.

It appears that an alternative to dairy farming and other traditional farming techniques is required on marginal land. The work being done at Blair Farm may be the catalyst for this change.

PROFESSOR C. D. TAPER RETIRES

Professor C. D. Taper, of the Department of Plant Science, officially retired from Macdonald on August 31st, but he has been doing post-retirement teaching until his replacement is named.



Dr. Taper came to Macdonald in 1951. Fron 1968 to 1970, he held the post of Option Chairman of Horticulture, when the Departments of Horticulture and Agronomy were combined. From 1970 until 1976, he was Chairman of the Department of Horticulture, which is now a part of the Department of Plant Science.

Dr. Taper taught Pomology and Principles of Plant Science (Horticulture section) at an undergraduate level and Plant Physiology at a graduate level.

Although Dr. Taper has not yet made definite plans, he is looking forward to his retirement. We wish him health, happiness, and success in his new ventures.

QFA ANNUAL MEETING

On November 7, 1979, the Quebec Farmers' Association held their Annual Meeting in the Centennial Centre Ballroom of Macdonald College. Approximately 100 people, some from as far as Gaspé, attended the meeting.

During a lunch-time meeting of the Board of Directors, President Doug Johnston, of Stanstead, and Vice-President Walter Kilgour, of Shawville, were re-elected for another one-year term. John Boersen, of Richmond, was elected as Treasurer, replacing Jim Todd.

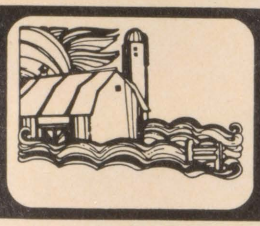
Reports were given by several of the local clubs. This was followed by a special report from John Boersen concerning a joint UPA-QFA meeting held November 2, 1979. The items discussed at the meeting were: English page in "La Terre de Chez Nous", CFA Annual Meeting, english information to leaders, capital gains tax, choice of farmers to receive english or french information, Bill 43, problems with hunters. Mr. Kirouac, Secretary General of UPA, restated his support for the english page in "La Terre de Chez Nous" and hoped that the number of subscribers to "La Terre de Chez Nous" with the english page would continue to increase. He also agreed that resolutions coming out of the QFA Annual Meeting should be added to those that the UPA would present at the CFA Annual Meeting.

The guest speaker for the afternoon session was W. Dobson Lea, President of the Canadian Federation of Agriculture. Mr. Lea spoke on a number of subjects of general interest to Canadian Agriculture. He talked about how farming was changing and becoming much more specialized and that farmers needed to be able to predict market trends and protect their farmland against industrial expansion. He saw producer-controlled commodity groups as an effective way for farmers to band together. He also suggested that the Canadian Federation of Agriculture was the recognized voice of agriculture in Canada and that through CFA the Minister of Agriculture could be made aware of the problems and concerns of farmers. Mr. Lea also made reference to fuel as one of the most important issues in the future for farming. He said that the CFA was planning a conference to ensure that fuel would be available to agriculture and at a reasonable cost.

A lively question and answer period chaired by Marc Côté of CBC's Radio Noon followed Mr. Lea's speech.

After thanks were made to Mr. Lea for his speech and his excellent responses to the questions, the meeting ajourned. It was followed by a reception for members and friends.

The Family Farm



Published in the interests of the farmers of the province by the Quebec Department of Agriculture.

RÉGIE QUÉBÉCOISE DES GRAINS

On November 29, 1979, the Québec Minister of Agriculture and Food, Jean Garon, tabled Bill 75 in the Assemblée nationale concerning the establishment of a Régie québécoise des grains.

Terms and conditions

The future Régie québécoise des grains will be limited to five members including a chairman general director, who will be the only full-time member. The task of the Régie will be:

— to promote the improvement of the quality of grain used in Québec, particularly through a grading system and quality of grain used in Québec, particularly through a grading system and quality standards;
— to promote the supply of high-quality grains;
— to protect growers by making sure of the solvency of grain buyers;
— to issue different categories of permits to grain dealers, regional centres and drying and milling centres which apply for them.

The Régie will be responsible for issuing permits to grain dealers, regional storage centres, and drying centres. A permit will be required only if an establishment wishes to use the name prescribed by regulations for a grade of grain.

However, once a permit has been issued to an enterprise, it must operate in conformity with the Act.

The Act stipulates that the government may enter into an agreement with another government in order to facilitate the application of the present Act and to make the grading system in force in Québec compatible with another system.

Permits may be refused or suspended by the Régie if it finds that the Act and its regulations are not being respected or considers an enterprise no longer capable of meeting its financial obligations to growers. The bill provides for right of appeal to the provincial court in case of refusal or suspension of permit.

In view of the existence of various pieces of federal legislation concerning grain grading, which are not applied in Québec, except in the case of seaway elevators, the bill stipulates that the government may enter into agreements designed to make our grading system compatible with those in force elsewhere.

CREATION OF A QUEBEC GRAIN BOARD ADVOCATED

The creation of a Québec grain board was agreed on by most of the participants in the Socio-Economic Conference on the cereal grains industry held recently at Saint-Hyacinthe.

According to opinions expressed during this important meeting, the future Québec grain board would remedy a number of problems connected with cereal production in Québec, including quality control, grading, and guarantees of financial responsibility.

As regards production, a consensus emerged at these sessions that there should be intensified and improved research on cereal varieties adopted to Québec growing conditions in general and even to the specific conditions of our main agricultural regions with grain-growing potential. It was insisted upon that research also be conducted in the oilseed sector, especially concerning soybeans, a crop which fits in well with corn and reduces the problem of soil compaction.

The Minister of Agriculture and Food, Jean Garon, told producers specializing in cereals, who demanded the application of an aid program for cereal storage adapted to their needs, that a committee was now studying the matter.

Another subject discussed at length at this conference concerned processing, more especially as regards security of supply. All admitted that grain-processing industries are making great progress in Québec. They thus need more certainty at the supply level in the face of the production quota formula recently estab-

lished by the Canadian Wheat Board and of the continual shortage of railroad cars to transport cereals for the domestic market. There was also general awareness that Québec is constantly at the mercy of labour conflicts which disrupt the transport of western cereals.

Consumers' representatives brought up the widespread problem of white flour in bread-making. They expressed the hope that the necessary measures would be taken to intensify information promoting the consumption of more nutritious bread, such as whole wheat and cracked wheat bread. For their part, bakery representatives insisted that they adjust their products to suit consumers and that the latter want white bread.

As regards research and training, the millers' representatives hoped that the lack of institutions to train technologists in this sector would be remedied.

Many speakers focused on the difficulties involved in the development, for grain-growing, of abandoned or under-used land. Problems mentioned concerned the financing of such projects, leases, and government participation. The question was brought up as to whether, besides the Office du crédit agricole, private financial institutions could not participate more actively in financing the redevelopment of such land. Speakers concerned about the financing of investments in leased farms agreed to study with the government the preparation of standard leases adapted to agriculture.

The Québec grain industry: Better Use of Resources and Security of Supply Desired

The two main reasons for the decision to give priority to cereal growing in Québec's agricultural development are the desirability of better use of our resources and need for increased security of our grain supplies.

This is what the Minister of Agriculture and Food, Jean Garon, explained when he opened the Conférence socio-économique sur l'industrie céréalière at Saint-Hyacinthe. It was the first in a series of five agrofood sector meetings being held until mid-February 1980.

Even though the area of land seeded to cereals has increased by 24 per cent in two years — from 907,000 acres in 1977 to 1,028,000 in 1979 — less than 20 per cent of the land under cultivation in Québec is devoted to cereal production. Nevertheless, we have many millions of acres of agricultural soil with grain-growing potential. The Minister believes that the increasing demand for cereal grains in the world is likely to create price conditions which would pay for the development of these land resources. According to Mr. Garon, if all sectors concerned really tackled the problem, Québec could have from three to four million acres in cereals in 15 or 20 years. With such an area devoted to cereals, 700,000 of them in corn, and with the yields already obtained by our good farms, the potential grain crop may be estimated at nearly four million metric tonnes.

By comparaison, the grain-processing sector is already much more developed. In fact, the plants located in Québec treat 29 per cent of the total deliveries of the entire Canadian grain industry. However, the links between grain growing and grain processing in Québec are still weak. Thus in 1977, only 214,000 tons of Québec-grown cereals entered marketing channels.

Untapped Opportunities

The Minister without portfolio for economic development, Bernard Landry, declared that "In Québec, the agro-food sector is probably the one in which there are the greatest untapped opportunities of increasing our overall standard of living while increasing our agricultural production and its processing and, at the same time, helping to correct some great imbalances in the Québec economy, such as the import-export situation and unemployment." As an example, Mr. Landry recalled that, in 1978, Quebecers spent $6,5 billion on food; This, in his opinion, constituted a market of incomparable size and stability.

Mr. Landry stated that, whatever the potential of the Québec economy or the Québec grain industry, it would not be possible to develop it without the dynamic cooperation of those concerned.

Intervening Parties

About a dozen representatives of groups or business interests concerned with the item on the agenda spoke at the opening session.

The president of the U.P.A., Paul Couture, declared that the policy of his organization has traditionally been to see fair play in the Canadian grain market, i.e., a policy which would allow the various regions in the country to obtain feed grains at the same basic price, plus transport and handling costs. Mr.

Couture also stressed another concern of the U.P.A., namely to ensure supplies for Québec, thus concurring with one of the priorities of the ministère de l'Agriculture et de l'Alimentation.

The representative of the Fédération nationale des associations de consommateurs, Pierre Racicot, urged those economically concerned to organize things so that bread is available to all consumers and not considered as a de luxe product because of its high cost. He finds it scandalous that the price of bread has risen by 228 per cent from 1971 to February, 1979.

The representative of the conseil des boulangeries du Québec, Robert Gadoua, declared that the tendency towards excessive increase in meat consumption should be curbed and balanced by increased cereal consumption. "We believe," he said, "that bread still holds the predominant place in this respect. We should even ask the government to include bread consumption in the educational programs of wholesome nutrition." Greater bread consumption would reduce our imports of meat from the West without hindering local meat production. According to Mr. Gadoua, this would have favourable economic consequences worth many millions of dollars and would benefit the Québec baker who is now faced with an oversupply of close to 100 per cent.

The president of the Coopérative fédérée du Québec, Roland Pigeon, said that in order to increase Québec's share in the industry's grain transactions, it is important to guarantee the industry a product equal in quality to that from other sources of supply and at a competitive price. Mr. Pigeon added that, bearing in mind that the Québec climate is not suitable for all crops nor even for all varieties of the possible crops, we must conclude that our farmers are condemned to excellence, that is they must produce quality and quantity in a very short growing season.

"Grain grading is the single most important factor in quality control at the commercial level," subsequently stated the president of the Association des négociants en céréales du Québec, Valmont Blanchette. The grain is separated into lots of specified quality and this serves as a basis for pricing. After saying that Canadian grain has such a good reputation that the present system fully satisfies producers and consumers, Mr. Pigeon praised the efforts made in recent years by the authorities to facilitate the construction of new storages.

The president of the Fédération des producteurs de cultures commerciales du Québec, Réal Fredette, said that his group will ask the Régie des marchés agricoles for a marketing plan which should allow them to combine offers to sell grain in order to negotiate realistic market prices.

According to other interested parties, processors (feed manufacturers) are encouraging the purchase of Québec cereals. It was also pointed out that the sector of grain for human consumption seems fairly limited for Québec cereal growers.

MILK IS PAID ON FAT BASIS. WHAT YOU CAN DO TO INCREASE FAT TESTS

First of all the cow was made to utilize forage as her primary source of nutrients; therefore, the dairy cow requires the bulk and fibre furnished by forage in order to function normally. Rumen digestion is accomplished by microbes (bacteria and protozoa) feeding on the forage and grain that the cow eats. When forage (hay, silage, haylage, and pasture) make up the major part of the diet, microbes that produce acetic acid are in predominance; whereas, when large amounts of grain are fed, microbes that produce propionic acid are in abundance. A high rate of acetic acid is favourable to normal milk production and a high proportion of propionic acid is favourable to low milk fat production. Also, rations that are conducive to a high proportion of propionic acid production are better for fattening animals than for milk production. This is why a good ration for dairy cattle is not the same as a good ration for feedlots for fattening slaughter cattle. Rations containing large amounts of forage stimulates rumination which increases saliva flow. Saliva provides a buffering action in the rumen and helps to maintain proper conditions for the microbes favourable to acetic acid production.

What are some of the feed-related causes of low fat tests? Rations low in crude fibre in the proper form are the usual causes of lowered fat test. The length and coarseness of the fibre in the ration are as important as the level of fibre.

1. Finely chopped and chopping hay will increase dry matter intake but will often cause a reduced fat test. If a pelleted grain mix is

being fed in addition to finely chopped forage, severe fat test problems may be encountered.

2. Feeding high levels of high quality corn silage and corn grain may reduce the amount of crude fibre. Research indicates that a minimum of 15 — 17 per cent crude fibre must be maintained to prevent fat test problems. In the case of finely chopped high-quality silage and heavy grain feeding, it may be necessary to include three to five pounds of long hay in the diet to prevent fat test problems and other possible digestive disorders.

3. Lush pastures in late fall or early spring quite frequently cause lowered fat tests. This type of forage is usually low in fibre and highly digestible, thus, in reality, contributing little if anything to prevent fat test depression.

4. Hot weather and feeding schedule. Frequently during hot weather, fat tests will drop. This may be due to reduced appetites and the cows eating less roughage in order to reduce their heat load. Roughages produce more heat during digestion than grain. Also, this may be compounded if grain is fed in the parlour and then the silage or forage is fed immediately afterwards. Adjustment in feeding schedules may help to alleviate some problems.

Guidelines for Prevention

1. Feed at least a 15-17 per cent crude fibre ration.

2. Feed at least 7 kg of forage dry matter (about 20 kg of silage or 7.5 kg. of hay or a combination of the two).

3. Feed adequate protein. Research indicates that there is a good relationship between level of protein feeding and fat test: at least an 18 per cent crude protein ration for fresh cows and high producers and a 13-14 per cent (total ration basis) for low producers.

Ration Additives: As a last resort, if the above feeding recommendations cannot be met, then certain mineral compounds can be added to help correct a low fat situation.

1. Sodium bicarbonate (baking soda) 360 to 454 gr per cow per day. Palatability problems may occur with this material and intake may be a problem. It should be added gradually.

2. Sodium bentonite, an inert clay, at the rate of 454 gr per cow per day. Usually no palatability problems occur.

3. Magnesium oxide fed at the rate of 180 gr per cow per day or a combination of sodium bicarbonate and magnesium oxide.

In short, it is always best to properly feed dairy cows a normal type ration to prevent milk fat depression rather than try to correct low fat test by artificial means. Usually cows will milk better and stay in better physical condition. Since milk is still sold on a fat basis, it is economical in most cases to feed to maintain normal fat tests.

Gabriel Gabreau, agr.,
Bureau régional,
Châteauguay

FARM INCOME STABILIZATION INSURANCE SCHEME FOR PRODUCERS OF WHEAT, OATS, AND BARLEY

The Minister of Agriculture and Food, Jean Garon, recently announced the coming into force of a new farm income stabilization insurance scheme for producers of wheat, oats, and barley.

This measure is available to more than 10,000 farmers who, in 1976, had altogether about 969 000 acres in these three cereals. In 1976, 8,556 were interested in oats, 1,035 in wheat, and 540 in barley. These data take into account only producers with over 25 acres in crop, which is the minimum area for eligibility. Together with the grain-corn scheme in force since November, 1978, this small-grains scheme constitutes an overall protection system for fodder cereals grown on a considerable scale in Québec.

During the first year of operation, participation by about 25 per cent of eligible producers is expected, that is by those who have more than 25 acres of wheat, oats, and barley.

A fifth scheme

This is the fifth income stabilization insurance scheme to be set up; the previous ones were for piglet producers, potatoes, beef cattle, and grain-corn.

Like the other schemes, the new one recognizes that farmers have a right to a positive net income based on a skilled worker's average salary. This income is calculated by adding to average production costs, calculated from a model farm, a certain proportion of a skilled worker's income. If the annual income calculated from the model and ob-

tained from the sale of the insured products is less than the stabilized net annual income for all insured producers, the insurance fund set up by the scheme pays compensation to participants.

In the case of growers of wheat, oats, and barley, the basis of calculation was a remuneration corresponding to 90 per cent of a skilled worker's salary. As these crops take up only part of a farmer's time, the scheme guarantees 12.5 per cent of this adjusted salary for each one of the three cereals.

Producer's assessments to the insurance fund are determined each year in keeping with the financial state of the fund and market forecasts. For each dollar paid by a producer, the Gouvernment du Québec contributes two. The minimum participation period is five years.

For the new scheme's first year of operation, premiums have been set at $3.90 per acre for oats, $0.35 per acre for wheat and $1.80 per acre for barley. The government will pay for each insured acre respectively $7.80, $0.70 and $3.60.

Subdrainage: Compulsory "BNQ" Certification for Plastic Drains

The Direction du génie of the Ministère de l'Agriculture et de l'Alimentation du Québec reminds all farmers that, in order to obtain government subsidies for drainage, any plastic pipes they use must be approved by the "BNQ" (Bureau de normalisation du Québec).

The reason for this special certification

in the case of the traditional terra cotta drainage tile, the quality can easily be checked. A light tap with a hammer is generally enough — a clear sound indicating a pipe in good condition. But such is not the case for plastic piping. It is not as easy to verify its quality. As the ministère de l'Agriculture et de l'Alimentation du Québec wishes to subsidize only sound installations, it made it necessary for the piping to be verified during manufacture and certified by the "BNQ" if found in conformity with specified standards. The "BNQ" certification is also a guarantee of quality.

Identification of certified piping

A shipping tag attached to each roll of piping allows farmers to tell at a glance approved piping from unapproved, and to buy accordingly. A "certificat de conformité" number on the tag indicates that the product is approved. Farmers must keep these shipping tags in order to prove that they used quality piping.

Up to now only polypropylene blackpipe (PP 90028) and polyethylene black pipe (PEhd) have been certified by the "BNQ". Fittings and plugs for these pipes may be of a different colour. Here is the list of certified products as of September 17, 1979:

Model of a shipping tag

(Nom du fabricant ou marque de commerce)
(Adresse)

No de lot: _____

TUBE — Longueur: _____ m; Diamètre Int.: _____ mm

PERTUIS — Superficie: _____ cm^2/m; Axe mineur: _____ mm

Matière plastique: _____

(Autres détails) _____

Fabriqué au Québec conformément à la norme BNQ 3624-115

No de certificat de conformité: _____

List of certified products "BNQ" Standard 3624-115 17-09-79

Certificate No.	Maker	Material	Approved diameters
# 08	Soleno Inc.	PEhd	100 mm.
		" "	150 mm.
		" "	200 mm.
		" "	250 mm
# 04	Plasti Drain Ltée.	PEhd	100 mm.
		" "	150 mm.
		" "	200 mm.
# 05	S.D.M. Ltée.	PEhd	100 mm.
		" "	150 mm.
		" "	200 mm.
		" "	250 mm.
# 02	Daymond Ltée.	PEhd	100 mm.
		" "	150 mm.
		" "	200 mm.
		PP	100 mm.
# 01	Les Plastiques Big "O" Ltée.	PEhd	100 mm.
		" "	150 mm.
		" "	200 mm.
		" "	250 mm.
		" "	300 mm.
# 07	Montreal Terra Cotta Ltée.	PEhd	100 mm.
# 03	Sherbrooke Pipe & Drainage Co. Ltée.	PEhd	100 mm.
		" "	150 mm.
# 06	Drainbec Inc.	PEhd	100 mm.
		" "	150 mm.
# 09	Les Plastiques Big "O" Québec Ltée	PEhd	100 mm.

Farmers who want to obtain more information on plastic drain certification and subsidies for subdrainage, may contact their local agricultural information office. It is also to be noted that different types of drains were shown at the stand of the Direction du génie at the Salon international de l'Agriculture et de l'Alimentation held in Montréal in October.

Think metric

The diameter and length of piping are now given in millimeter (mm) and meters(m). The following table gives corresponding measurements in the old and new system:

Inches	Diameter Millimeters	Length meters
4	100	75
6	150	30
8	200	6
10	250	6
12	300	6

This means that a 100-mm pipe equals a 4-inch pipe. Lengths have been standardized and the 100-mm wide pipe will be delivered in 75-meter rolls.

This Month with the QWI

Christmas and New Year's Greetings to each one of you. I would like to be able to greet you in your homes at this Holiday Season but, as this is impossible, please accept my personal greetings through these pages.

Let us, at this special time of year, remember that it is the little things in life that really mean the most to us.

The objectives of our organization are wide-spread, and our powers for good are tremendous. In all our activities we can do much to help to bring peace and happiness to our homes and country.

Let us hope that the bells that so joyously proclaim anew the message of peace and good will may reach our hearts and in return we may be more responsive to the needs of others.

It is my wish that each one of you will have a blessed, peaceful, and joyous Christmas, and a happy and prosperous 1980.

May God bless you all.

Ina Kilgour,
President,
Quebec Women's Institutes.

Trip to Another World

Howick WI's Education meeting featured a talk by Mr. Jim Barr on his recent trip to the Peoples' Republic of China. Mr. Barr, a retired high school teacher who has seen much of the world, is well known to the group. A table covered with souvenirs and a map showing the places he had visited added interest. He touched on all aspects of life there: rice farming and the silk worm industry, jade and ivory carving factories, and carpet-making. He told of the quiet-spoken people, their way of dressing, their foods, their friendly attitude, their "five o'clock bicycle jams", as cars are for the wealthy and diplomats. Chinese opera was impressive with beautiful sets and costumes. The 3,000 mile long "Great Wall" was described — where, at some time, three hundred thousand men worked. Mr. Barr travelled by plane, by boat, and by train, where the custom is to serve tea. He shopped in Friendship Stores for tourists, and visited ornate buildings, pagoda-like temples with lions guarding the entrances, and cemeteries. He mentioned that his eyes were always busy and he found never a dull moment in this country where English is the second language.

Mr. Barr was introduced by President Isabel Templeton, who also spoke of Munroe Scott's book about Dr. Robert McClure, "The China Years — 1900-1949". Dr. McClure has been described as a modern day Dr. Albert Schweitzer. He is a missionary, a surgeon, a mechanic, an adventurer, and the only layman moderator of the United Church of Canada.

Convener for the meeting, Irene Moss, expressed the group's thanks to Mr. Barr for a most interesting afternoon.

Thyra Tolhurst,
Howick WI

Lennoxville Celebrates the 65th

Lennoxville celebrated the 65th Anniversary of the founding of this branch by holding a banquet and social evening.

This branch was formed on June 14, 1914, as the first branch in Sherbrooke County with the motto "For Home and Country", and through the years members have been generous with their time and talents. Interest has been keen in all areas. Many whom we shall not forget have been called to higher service, and many have moved away.

At this banquet two members were honoured: Mrs. Lilian Stewart, who has been unable to attend meetings because of ill health, but has kept up her membership and aided in all commitments as well as being a faithful knitter for Save the Children; all were pleased to have her with us. Mrs. Hugh Wallace had the pleasant duty to perform of presenting her with an Abbie Pritchard throw in recognition of her faithful service. Mrs. Harold Worster, President, presented Mrs. Herman Edgecombe with a 50 year-bar-pin in recognition of her many years of service, which included 25 years as treasurer of the branch.

This year there is a membership of 15. Having 10 Life Members and four of them with 50-year pins testifies to the interest taken in the work.

Members, besides holding branch offices, have held County, Provin-

cial, and FWIC offices, and have attended FWIC and ACWW conferences here and abroad.

This is some of the work done: teas and craft sales held, craft competitions, visiting and entertaining senior citizens, assisting with school fairs, having interesting displays, exchanging visits with other branches, entering J. & P. Coats, QWI, and Expo-Quebec competitions, as well as local exhibitions, making cancer dressings, working for CanSave, selling cards and, this year, giving an extra cash donation for the Year of the Child. Donations went to School Fairs, hot lunch fund, 4H Calf Club, S.P.C.A., UNICEF, cancer patients, QWI Service Fund, Pennies for Friendship, and Senior Citizens Home Fund, to name some of the year's activities.

Having the County Executive and our own two Provincial Officers with us added something special to this anniversary evening.

Small souvenir gifts were at each place and the table was decorated in WI colours with flowers and candles and centred with an appropriately decorated cake.

Following the banquet a social time was enjoyed — by playing cards and with pleasant chatter reminiscing about the old days.

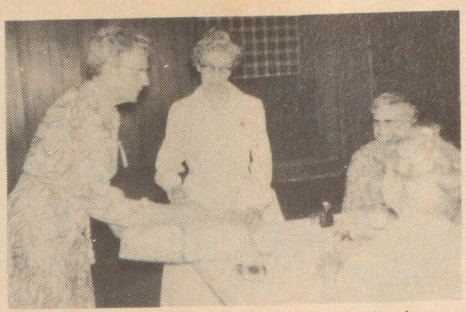
Mrs. O. M. Wallace,
Lennoxville WI

Awards Night

The Macdonald Scholastic Awards Banquet was held on Thursday, November 8, 1979, in the Centennial Centre.

A reception was held prior to the banquet, giving an opportunity for the recipients and the donors, as well as the members of the Staff of the School of Food Science and the Faculty of Agriculture, to mingle and to get acquainted. The Chairman for the evening was Professor H. R. Neilson. The gathering was welcomed by Dean L. E. Lloyd.

The delicious Smorgasbord dinner was prepared and served by students of the School of Food Science. The tables were decorated with flowers.



At Lennoxville's 65th Anniversary gathering Mrs. Hugh Wallace is shown presenting Mrs. Lillian Stewart with an Abbie Pritchard Throw. Mrs. Herman Edgecombe, seated, facing camera, received a 50-year-bar-pin.

I had the pleasure of representing the Quebec Women's Institutes and to present our Awards.

The Frederica Campbell MacFarlane Prize awarded to a student from a rural area of the province obtaining the highest final mark in any of the three years of the Bachelor of Science course was once again won by Miss Stephanie Smith of Granby, and Miss Susan Salter of Lennoxville once again received the Mrs. Alfred Watt Memorial Prize, which is given to a student from rural Quebec who shows qualities of leadership. These young ladies were as charming as ever, and I enjoyed renewing acquaintances with them.

The Quebec Women's Institutes Bursary, which is given to the son or daughter of a farmer living in Quebec and who has spent at least one year on the farm and is registered in the second year of the Diploma Program, was won by Mr. Daniel Booth from Lennoxville. Daniel is a very modest young fellow and is very interested in farming. He would like to work away from home for a while to get experience and is doubtful whether he will ever really take over the home farm.

I was very much impressed by these students, and I wish them every success as they pursue their chosen vocations.

Mrs. Walter Kilgour,
President, Quebec Women's Institutes,

Change of Address

The new address for the Provincial Treasurer Mrs. G. Cascadden is: 137 Queen St., Apt. 3, Lennoxville, Que. J1M 1J7.

Valcartier Visits

At a meeting of the **Valcartier** WI it was decided that the branch make plans to visit Canadiana Village in Rawdon. Not all members were able to make the trip for various reasons; however, on August 14 approximately half the members had finalized plans and we set out at seven o'clock on a teeming wet morning. After an hour or so the sun came out and we began to really enjoy the trip.

We ran into a lot of traffic as people were going to work at that particular time. Later we left the highway and travelled through beautiful farming areas, some of which were celebrating their 300th anniversary. It was interesting to note that so many of the old stone houses were apparently still in use and in such good condition. We saw many modern farm buildings for turkeys, pigs, and chickens. We found this route more interesting than the new modern highways.

We stopped at Cap de la Madeleine for breakfast, and after a couple more hours of driving, we arrived at Rawdon. Then began our search for the Village. Our Vice-President made inquiries and after a few more miles, and with some misgivings, we arrived at the site. It was then 11:30.

We were very warmly greeted by Mr. Moores and his helpers. Then we were treated to a glass of their homemade elderberry wine which we enjoyed very much. We also enjoyed the homemade buttered bun which went with the wine.

The Village was quite busy as a television crew from Toronto was trying desperately to complete a butter commercial. After a delicious dinner, we began our tour of all the buildings fitted with their own particular antiques. It was the first time I had seen a trundle bed, and I found it unique. I could actually see the children in these beds warmly wrapped in brightly covered handmade quilts.

Visiting the school brought back some memories, too, and when we saw the French textbook we used away back then, we had to agree that our chances of graduating as bilingual students were rather dim.

Mr. Moores took us for a ride in his Model T Ford — what a nice way to finish off our tour. It was a pleasure to visit this Village and its charming host and hostesses. Everyone seemed so friendly and anxious to help us have a good day. We signed the visitors book in the little church, which we understand will soon be a part of the Canadiana Village. Then we gassed up and started off for Valcartier. We arrived home at nine o'clock where it was still raining!

The 50th Anniversary of the Abbotsford WI in Rouville County was celebrated with a luncheon held in Granby. There were three Charter Members present: Mrs. R. Thomson, Mrs. R. Coates, and Mrs. W. Mitchell. Two other Charter Members were in hospital: Mrs. M. Honey and Miss Muriel Marshall. We regret that Mrs. Honey, the first President of Abbotsford, passed away on September 6th.

Dear WI Members:

My forecast was right. All of you sent in your reports promptly and I needed two days to read them! It is a very good thing to have a friendly WI-neighbour living next door. Sometimes we sit together to unriddle some of the writing. What I do understand from your reports is that one thing is very important to all of us — young and old — education!

Most roll calls are engaged in this subject and here you will find some very pleasing ones: **Cowansville,** "give a sentence in French." **Stanstead East** wants "a subject they have been taught in school or at least they would teach it today." **Granby Hill** says "Take time to read, it is the foundation of education," also to give new ideas a chance, such as thinking in metric which is a form of education, and thus **Arundel** asked members "to give their height or weight in metric or pay 25 cents." **Ormstown** also suggests the use of more French in their daily life. **Gatineau** asked for the September roll call, "What have I done since leaving school to improve my education?" **Upper Lachute East End** put it in the way of questioning the members about historic sites in Canada and **Huntingdon's** roll call was "name something that you like to learn." All agreed that learning new things and improving known ideas are the fundamental rules of education.

Practical advice becomes worth while if it is demonstrated right on the spot. Home Economic Convener of **Matagami,** Mrs. Gisela Synchra, gave a lecture on tailoring and showed how pockets, lapels, and collars were made in a tailored jacket.

Of great interest was a demonstration at **Stanbridge East** where Mrs. Juel Weideman displayed the carding and spinning of wool on a simple drop spindle. Several members tried very hard, but what their grandmothers did with ease they found most difficult to copy. They were grateful, however, for such individuals who keep these forgotten arts alive.

Guest speaker at the **Grenville** WI was Mr. Leonard Dupuis. He demonstrated and told the members all about antique pieces of glass, china, and crockery. For such a young man, he knew his subject well. Each member also brought in an antique and told its story. Mr. Dupuis held a quiz to test their alertness on some articles.

There are so many ways to strengthen our education, but it is always necessary that we not only listen but that we also think the subject over.

There are many questions and answers about drugs and pills which are used by many of us daily. Health and Welfare Convener of **Dalesville-Louisa** read and discussed an article on this subject and spoke about the disadvantages in taking more than one kind at a time.

Education can also be gained from learning about foreign peoples' culture. **Wright** members had a visit to the newly completed mosque in Ottawa West, where they were shown a film of the many ancient buildings and customs that are still used in the homeland. The mosque is the only one of its size in Canada and the architectural structure of this building is unique. The dome and pinnacle can be seen from miles away. The guest speaker at **Clarendon** was their own Pontiac County President Mrs. Violet Poole. She spoke on the contribution the pioneer men and women made to our society as doctors, nurses, ministers, and teachers. She read the minutes of a school board meeting from Eardley in 1871. These men and women over 100 years ago were not only the backbone of education but also of comradeship, courage, help, and self-sacrificing devotion.

Howick held a Home Economics meeting and there was another kind of learning experience — a demonstration of different kinds of omelets. Very popular, they were cooked and then eaten! Also interesting to hear were the reports which they gave of a project started last spring. At that time they gave

different garden seeds to pupils and, at a gathering in the Elementary School, each pupil told of his or her experience with the seed. I feel that this project is especially educational for both parties.

There are many ways to promote knowledge. Mrs. McCutcheon of **Cowansville** WI gave an historical quiz on Canada. She gave dates and asked if they were true or false. Should your convener pick up this very good idea for one of your next meetings, be prepared!

In **Stanstead County** all five branches were engaged first in the Ayer's Cliff Fair then in the County School Fair. The branches took part in a craft competition with the Cercles des Fermières, all making a good showing. With over 800 exhibits by elementary students of four county schools, the women of the branches did an excellent job of organizing, in conjunction with teachers who conducted sports activities, the County School Fair. Mrs. Olive Whitcomb and Mrs. Janice Soutière, conveners of agriculture and on the school fair committee, presented the WI trophies to Steve Dustin, runner-up for the boy's highest aggregate; the girl's runner-up was Alison Cheal, and highest was Laura Desruisseaux. **Beebe** signed a petition to stop spraying herbicides along highways and railway tracks. Donations to people in need are a main goal of WI activities. Many of the branches made extraordinary efforts to earn the money, therefore. **Denison Mills** worked at the WI booth at the Richmond Fair. They gave $25 to The Year of the Child project at St. Frances School and to the Brownies and UNICEF. They collected 4,800 bread tags and soup labels for the wheelchair project.

At **Cleveland,** each member gave an extra dollar to buy books for a children's home. The also gave $15 to St. Frances School to buy prizes for slow learners and $20 to buy books.

At the Stanstead County School Fair, left to right, Mrs. Olive Whitcomb, WI Agriculture Convener, Steve Dustin, boys' runner up of highest aggregate in exhibits, Laura Desruisseaux, girls' highest aggregate, Alison Cheal, runner up, and Mrs. Janice Soutiere, Fair Board Committee for WI.

Richmond Young Women earned money by catering for weddings and banquets and donated to UNESCO, UNICEF, Save Sight, Quebec Service Fund, Quebec Extension Fund, Cecil Butters Memorial Hospital, and to many worthy purposes. **Clarendon** made a donation of $150 for the purchase of an air mattress for their hospital, and **Dewittville** spent $200 for the Boat People with the money coming from their work at the Huntingdon Fair. It was a big undertaking, but extremely profitable, to serve meals to the visitors for a week. **Granby Hill** gave a donation to the Douglas Hospital and the Salvation Hospital. **Brompton Road** and **Milby** gave donations of $25 to the Sherbrooke Ploughmen's Association, $25 to the Sherbrooke Hospital, $20 to the Farmers' Club, and $40 for the I.Y.C. project. A bursary of $50 will be given to a home economics student at the Alexander Galt Regional High School.

Grenville decided to send $10 for their adopted child, Shima, in Bangladesh for a Christmas present. **Brownsburg** donated several pairs of crutches to the Red Cross and the Legion. They received a container filled with "Pennies for Friendship" from Mr. Seary, a donation from his mother, the late Mrs. Gertrude Seary — their last Charter Member.

Most of you, dear members, finish your reports with a sentence of thoughts and many of them are worth while to bring to the members' attention. Here are some: The pleasantest things in the world are pleasant thoughts, and the great art in life is to have as many of them as possible. The dictionary is the only place where success comes before work. Our own faults irritate us most when we see them in others. It has been said, "what a man does for himself dies with him, what he does for his community lives on." The test of tact is not how often you please, but how seldom you offend. To realize these sentences, I am very happy.

Ruth von Brentani,
QWI Publicity Convener.